

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-43 (canceled).

Claim 44. (currently amended): ~~A~~ An isolated nucleic acid molecule which encodes a polypeptide ~~selected from any one of:~~

- ~~(a) SEQ ID No: 2; and~~
- ~~(b) an immunogenic fragment comprising at least 20 consecutive amino acids from SEQ ID NO:2.~~

Claim 45. (currently amended): An isolated nucleic acid molecule comprising SEQ ID No: 1.

- ~~(a) SEQ ID No: 1; or~~
- ~~(b) a sequence encoding SEQ ID NO:2.~~

Claim 46. (previously presented): An isolated nucleic acid molecule which is anti-sense to the nucleic acid molecule of claim 44.

Claim 47. (currently amended): An isolated nucleic acid molecule which encodes a fusion protein, said fusion protein comprising a polypeptide encoded by the nucleic acid molecule ~~according to~~ of claim 44 and a second polypeptide.

Claim 48. (previously presented): The nucleic acid molecule of claim 47 wherein the second polypeptide is a heterologous signal peptide.

Claim 49. (previously presented): The nucleic acid molecule of claim 47 wherein the second polypeptide has adjuvant activity.

Claim 50. (currently amended): The nucleic acid molecule ~~according to~~ of claim 44, ~~operatively operably~~ linked to one or more expression control sequences.

Claim 51. (currently amended): ~~A vaccine comprising a vaccine vector wherein the vaccine vector comprises~~ comprising a polypeptide-encoding nucleic acid sequence selected from any one of:

- (i) SEQ ID No: 1; and
 - (ii) a nucleic acid sequence which encodes SEQ ID NO:2; and
 - ~~(iii) a nucleic acid sequence which encodes an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2;~~
- wherein the nucleic acid is capable of being expressed.

Claim 52. (currently amended): A ~~vaccine comprising a vaccine vector wherein the vaccine vector comprises~~ comprising a nucleic acid encoding a fusion protein, wherein the fusion protein comprises:

- (a) a first polypeptide ~~selected from any one of:~~
 - ~~(i) a polypeptide encoded by SEQ ID No: 1;~~
 - ~~(ii) a polypeptide encoded by a nucleic acid sequence comprising at least 38 consecutive nucleotides from SEQ ID No: 1 in the reading frame set forth in SEQ ID NO:2;~~
 - (iii) a polypeptide whose sequence is set forth in SEQ ID No: 2; and
 - ~~(iv) an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2; and~~
 - (b) a second polypeptide;
- wherein the nucleic acid encoding the fusion protein is capable of being expressed.

Claim 53. (currently amended): The vaccine vector of claim 52 wherein the second polypeptide is a heterologous signal peptide.

Claim 54. (currently amended): The vaccine vector of claim 52 wherein the second polypeptide has adjuvant activity.

Claim 55. (currently amended): The vaccine vector of claim 51 wherein ~~each first the~~ nucleic acid is ~~operatively~~ operably linked to one or more expression control sequences.

Claim 56. (currently amended): The vaccine vector ~~of according to~~ claim 51 wherein the polypeptide-encoding nucleic acid is the first nucleic acid, and wherein the vaccine vector further comprises a second nucleic acid encoding an additional

polypeptide which enhances the immune response to the polypeptide expressed by said first nucleic acid.

Claim 57. (currently amended): The vaccine vector of claim 56 wherein the additional polypeptide is a *Chlamydia* polypeptide.

Claim 58. (currently amended): A pharmaceutical composition comprising the nucleic acid according to claim 45 44 and a pharmaceutically acceptable carrier.

Claim 59. (currently amended): A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent suitable for use in a vaccine, and a ~~polypeptide encoding nucleic acid molecule selected from any one of:~~

(i) ~~SEQ ID No: 1;~~

(ii) ~~a nucleic acid sequence which encodes SEQ ID NO:2; wherein the nucleic acid is capable of being expressed. and~~

(iii) ~~a nucleic acid sequence which encodes an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2;~~

~~wherein the nucleic acid is capable of being expressed.~~

Claim 60. (previously presented): A unicellular host transformed with the nucleic acid molecule of claim 50.

Claims 61 and 62. (canceled).

Claim 63. (withdrawn): A polypeptide encoded by the nucleic acid sequence according to claim 45 in the reading frame set forth in SEQ ID NO:2.

Claim 64. (withdrawn): A polypeptide comprising an amino acid sequence selected from any one of:

(a) SEQ ID No: 2;

(b) an immunogenic fragment comprising at least 20 consecutive amino acids from SEQ ID NO:2.

Claim 65. (withdrawn): A fusion protein comprising the polypeptide of claim 63 and a second polypeptide.

Claim 66. (withdrawn): The fusion protein of claim 65 wherein the second polypeptide is a heterologous signal peptide.

Claim 67. (withdrawn): The fusion protein of claim 65 wherein the second polypeptide has adjuvant activity.

Claim 68. (withdrawn): A method for producing the polypeptide of claim 63, comprising the step of culturing a unicellular host transformed with a nucleic acid encoding the polypeptide of claim 63.

Claim 69. (withdrawn): An antibody against the polypeptide of claim 63.

Claim 70. (withdrawn): A vaccine comprising at least one first polypeptide selected from any one of:

- (i) a polypeptide whose sequence is set forth in SEQ ID No: 2; and
- (ii) an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2.

Claim 71. (withdrawn): A vaccine comprising a fusion protein, wherein the fusion protein comprises:

- (a) a first polypeptide selected from any one of:
 - (i) a polypeptide whose sequence is set forth in SEQ ID No: 2; and
 - (ii) an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2; and
- (b) a second polypeptide.

Claim 72. (withdrawn): The vaccine of claim 71 wherein the second polypeptide is a heterologous signal peptide.

Claim 73. (withdrawn): The vaccine of claim 71 wherein the second polypeptide has adjuvant activity.

Claim 74. (withdrawn): A vaccine comprising the polypeptide according to claim 63 and an additional polypeptide which enhances the immune response to the first polypeptide.

Claim 75. (withdrawn): The vaccine according to claim 74 wherein the additional polypeptide comprises a *Chlamydia* polypeptide.

Claim 76. (withdrawn): A pharmaceutical composition comprising the polypeptide according to claim 63 and a pharmaceutically acceptable carrier.

Claim 77. (withdrawn): A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent suitable for use in a vaccine, and a fusion protein comprising:

- (a) a first polypeptide selected from any one of:
 - (i) a polypeptide whose sequence is set forth in SEQ ID No: 2; and
 - (ii) an immunogenic fragment comprising at least 12 consecutive amino acids from SEQ ID No:2; and
- (b) a second polypeptide.

Claim 78. (withdrawn): A pharmaceutical composition comprising the antibody according to claim 69 and a pharmaceutically acceptable carrier.

Claim 79. (currently amended): A method for preventing or treating *Chlamydia* infection comprising administering to a patient an effective amount of:

- (a) the nucleic acid according to claim 45 ~~44~~;
- (b) ~~a vaccine comprising~~ a vaccine vector wherein the vaccine vector comprises the nucleic acid according to claim 45 ~~44~~;
- (c) a pharmaceutical composition comprising the nucleic acid according to claim 45 ~~44~~ and a pharmaceutically acceptable carrier; or
- (d) a polypeptide encoded by ~~[[a]]~~ the nucleic acid according to claim 45 ~~44~~ in the reading frame set forth in SEQ ID NO:2; ~~or~~
- ~~(e) an antibody against the polypeptide of (d).~~

Claim 80. (withdrawn): A method of detecting *Chlamydia* infection comprising the step of contacting a body fluid of a mammal to be tested, with a component selected from any one of:

- (a) the nucleic acid according to claim 45;
- (b) a polypeptide encoded by the nucleic acid according to claim 45 in the reading frame set forth in SEQ ID NO:2; and

(c) an antibody against a polypeptide encoded by the nucleic acid of (b).

Claim 81. (withdrawn): A diagnostic kit comprising instructions for use and a component selected from any one of:

- (a) the nucleic acid according to claim 45;
- (b) a polypeptide encoded by the nucleic acid according to claim 45 in the reading frame set forth in SEQ ID NO:2; and
- (c) an antibody against a polypeptide encoded by the nucleic acid of (b).

Claim 82. (withdrawn): A method for identifying the polypeptide of claim 63 which induces an immune response effective to prevent or lessen the severity of *Chlamydia* infection in a mammal previously immunized with polypeptide, comprising the steps of:

- (a) immunizing a mouse with the polypeptide of claim 63; and
- (b) inoculating the immunized mouse with *Chlamydia*;

wherein the polypeptide which prevents or lessens the severity of *Chlamydia* infection in the immunized mouse compared to a non-immunized control mouse is identified.

Claim 83. (currently amended): The vaccine vector according to claim 51 wherein the vaccine vector is expression plasmid pCAI764 as shown in Figure 3.

Claim 84. (withdrawn): An isolated ATP/ADP translocase encoded by the nucleic acid according to claim 44, wherein the translocase is from a *Chlamydia* species other than *Chlamydia trachomatis*.

Claim 85. (withdrawn): An isolated ATP/ADP translocase according to claim 84 which is from *Chlamydia pneumoniae*.

Claim 86 and 87. (canceled)

Claim 88 (new). The nucleic acid molecule of claim 50, wherein the one or more expression control sequences comprise a promoter for expression of the nucleic acid in a mammalian cell.

Claim 89 (new). The vaccine vector of claim 55, wherein the one or more expression control sequences comprise a promoter for expression of the nucleic acid in a mammalian cell.

Claim 90 (new). The nucleic acid molecule of claim 88, wherein the promoter for expression of the nucleic acid in a mammalian cell is a viral promoter.

Claim 91 (new). The vaccine vector of claim 89, wherein the promoter for expression of the nucleic acid in a mammalian cell is a viral promoter.

Claim 92 (new). The nucleic acid molecule of claim 90, wherein the viral promoter is the cytomegalovirus (CMV) promoter.

Claim 93 (new). The vaccine vector of claim 91, wherein the viral promoter is the cytomegalovirus (CMV) promoter.